

ABSTRACT OF THE DISCLOSURE

A method of removing a heavy metal from a composition comprises: (1) providing a fibrous protein fiber; (2) agitating the fibrous protein fiber; (3) making a slurry of the agitated fibrous protein fiber; (4) contacting the agitated fibrous protein fiber slurry with a composition containing a heavy metal ion or a heavy metal ion complex; and (5) filtering a supernatant produced in step (4) to remove the heavy metal from the composition. The fibrous protein of the fibrous protein fiber can be selected from the group consisting of keratins, collagens, fibrins, and elastins. Typically, the fibrous protein of the fibrous protein fiber is a keratin. Yet another aspect of the present invention is a method of removing a heavy metal from a composition, comprising: (1) providing a keratin protein fiber; (2) agitating the keratin protein fiber by a process selected from the group consisting of ultrasound and mechanical mixing; (3) treating the keratin protein fiber with alkali at a pH of between about 9 to about 14; (4) packing the agitated alkali treated keratin protein fiber into a column; (5) passing the composition through the column under pressure to remove the heavy metal from the composition; (6) desorbing adsorbed heavy metal from the column by treatment with an acid; (7) washing the column for a first time; (8) regenerating the column by passing alkali through the column; and (9) washing the column for a second time.